

PITTSBURGH AND CASTLE SHANNON RAILROAD,
MCKINLEY PARK BRIDGE,
(Pittsburgh & Castle Shannon Railroad, Bridge No. 1005)
Overbrook Trolley Line,
Crossing Bausman Street at McKinley Park
Pittsburgh
Allegheny County
Pennsylvania

HAER NO. PA-410-B

HAER
PA
2-PITBU
76B-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD
PITTSBURGH & CASTLE SHANNON RAILROAD,
MCKINLEY PARK BRIDGE
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HAER No. PA-410-B

Location: Overbrook Trolley Line, Crossing Bausman Street
at McKinley Park
Pittsburgh
Allegheny County, Pennsylvania

Quad: Pittsburgh West, Pennsylvania
UTM: 44.73660.584390

Date of Construction: 1929

Engineer: Pittsburgh Railways Company

Present Owner: Port Authority of Allegheny County
2235 Beaver Avenue
Pittsburgh, Pennsylvania 15233-1080

Present Use: Out of Service

Significance: The McKinley Park Bridge is one of four bridges which carried Pittsburgh Railways' trolley cars, along the 6 mile route from Mount Washington to Castle Shannon.

Project Information: The Port Authority's Stage II Light Rail Transit Project proposes the in-place modernization of the Overbrook, Library, and Drake Trolley Lines. The proposed project will include the removal and replacement of the McKinley Park Bridge.

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The McKinley Park Bridge crosses Bausman Street, near Saw Mill Run Boulevard. The current structure, redesigned and constructed in 1929, carried the Pittsburgh Railways Company Washington and Charleroi Interurban Lines and the Overbrook Trolley Line between Pittsburgh and Castle Shannon, Pennsylvania. The final bridge inspection report, completed in 1992, provides a description of the current standing structure.

According to AWK Consulting Engineers, the current bridge is an open timber deck, single track trestle. The structure is a combination stringer and through girder steel bridge, with eight approach spans from the north, three main spans, and six approach spans to the south. The bridge length is 446 feet. The bridge's girder section has three spans, totaling 131 feet in length, all supported by two steel towers. These spans are riveted, through girder-floorbeam-stringer construction with an 8' deep, 81' long, middle span flanked by two 6' deep, 25' long spans. The main spans are supported by two trussed towers. The final bridge inspection reports that this design was chosen to provide for a future track addition. The steel stringer approach spans are supported on timber bents comprised of a timber cap beam, four timber posts, a sill timber, and a lateral bracing timber. The bents are trapezoidal frames, having two sloped outer columns.¹ This portion of the bridge stands approximately 70' above Bausman Street. The bridge's steel stringer section has eleven spans, supported on timber bents at 25' centers. The aggregate length of the eleven spans is approximately 315 feet.²

The 1929 construction of the plate girder span around the 1870s wooden trestle caused the floor beam spacing to be asymmetrical. The current floor beams are 16" deep rolled beams of three different weights. According to the final bridge inspection report, the "longest beam spacing is 11'-5", while the shortest is 2'-2". The floor beams are connected to the girders by double angle, full depth stiffeners. The external face of the web has stiffeners at the floor beam locations except where the spacing is shortest, in which case the floor beam location nearer mid-structure has no external stiffener at its location."³

The main span stringers are the original viaduct stringers, which were removed when Pittsburgh Railways Company constructed the 1929 plate girder spans. The deck is timber ties, most of which are notched to rest on the stringer top flanges. Unnotched timber ties are clamped

¹ AWK Consulting Engineers, "Periodic NBIS Bridge Inspection Report--McKinley Park Bridge, April 1992," 2. Located at the Way and Structures Division of the Port Authority of Allegheny County, South Hills Junction Offices, Pittsburgh, Pennsylvania. (Hereinafter cited as AWK, "Bridge Inspection")

² Gannet, Fleming Corrdry & Carpenter, Inc. "Condemnation of Transit Property of Pittsburgh Railways Company by Port Authority of Allegheny County--Bridges and Trestles Field Inspection and Study of Physical Condition 1964," Pittsburgh Railways Papers-AIS 74:29, Series III-Box 13, PAT Exhibit 209, University of Pittsburgh, Hillman Library, Archives of Industrial Society, Pittsburgh, Pennsylvania.

³ AWK, "Bridge Inspection," 3.

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to the top flange. The rails are to the inside of the stringers and timber wheel guards are bolted to the ties for the full length of the structure. Two steel trolley wire brackets are attached to the main spans. One timber bracket is attached to each of the approach spans.⁴

The north abutment is a stone masonry stem topped with a 9" concrete bearing seat. The west wingwall is parallel to the track and is constructed of pre-cast concrete beams. The east wingwall is a timber crib with a 12" diameter pipe outletting through the wingwall adjacent to the abutment stem. The south abutment is a stone masonry and concrete abutment with timber wingwalls parallel to the track.⁵ This is the structure that stands over Bausman Street today. The removal and replacement of portions of the timbers, the substructure, and the rails occurred for maintenance and safety reasons from 1929 to the present-day.

The most important description of the earlier trestle was contained in a 1929 letter account. The letter recounted legal proceedings to decide the bridge's ownership and the bridge's right-of-way. This letter revealed the following:

The Pittsburgh & Castle Shannon Railroad Company secured rights-of-way deeds for the line of their road and constructed the Viaduct in question in the early seventies [1870s]. Condemnation proceedings were instituted at Nos. 654-655-656 December Term 1873, involving property of S.S. Boggs and S.S. Boggs, Trustee for S.L. Boggs. The original map prepared by J.H. McRoberts and made a part of these proceedings, cannot be located, but there is a copy in our files, apparently made from this original. At that time, the property over which a portion of the Viaduct is constructed was owned by John Murray. Messrs. Murray, S.S. Boggs, and S.L. Boggs owned Lot 4, Lot 3, and Lot 6 respectively, in Pittsburgh Manor. In 1898, the City of Pittsburgh purchased approximately 63 acres from Thomas S. Maple, successor in title to John Murray, out of which was formed McKinley Park. . . . No reservation for a right-of-way for the portion of the Viaduct of the Pittsburgh & Castle Shannon Railroad Company, now proposed to be reconstructed in part, was mentioned in that deed.⁶

Thus, the 1870s is the earliest date for a McKinley Park bridge crossing. The historic record does not reveal the materials used in construction, yet later historic photographs reveal the structure was a wooden trestle.

⁴*Ibid.*, 3-4.

⁵*Ibid.*, 6.

⁶P. Cane to Fred W. Lyon, letter dated 25 March 1929, Historic Bridge Files, 920.5 McKinley Park Bridge Files, Way and Structures Division, Port Authority of Allegheny County, Pittsburgh, Pennsylvania. (Hereinafter cited as McKinley Park Bridge Files).

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In 1905 the Pittsburgh Railways Company signed a ninety-nine year lease for the P. & C.S.R.R. route. In order to incorporate this route into its Greater Pittsburgh trolley network, the Pittsburgh Railways Company focused its attention to establishing a viable passenger service. The Company's efforts to redirect the company's market from industrial to commercial signified the evolution of the steam railroad into an electric trolley line.

Initially the company took measures to widen and electrify the line immediately. The first improvement was the laying of a third rail to accommodate Pennsylvania Broad Gauge trolley cars. Additionally, Construction Order 512 provided for the "[l]aying of electric railway tracks along the right of way of the Pittsburgh and Castle Shannon Railroad from Castle Shannon to [a] point of connection with the Mount Wash. St. Ry. [for the] length of [the] route."⁷ These changes resulted in the McKinley Park Bridge being retrofitted for trolley use, and did not represent the construction of a new structure. Therefore, the original structure stood from the 1870s until 1929 when Pittsburgh Railways replaced the bridge. The retrofitting of the 6 mile route for electricity occurred between April 30, 1909, and December 31, 1910, according to Pittsburgh Railways' records. The total cost for the renovation of the route was \$112,584.59.⁸

Pittsburgh Railways initially planned to reconstruct the bridge in 1914. The company proposed the structure's expansion with double-tracking in order to accommodate the expected increased in traffic from the South Hills area. Railways' engineers issued a cost estimate for the replacement of the single-tracked, wooden trestle with a double-tracked, steel structure. The estimate included cost for ninety-six tons of 80 pound rail, 248 tons of steel, 210 cubic yards of concrete, and 26 joints, totaling \$38,960.70. It appears that the cost may have been prohibitive for the company, as the structure remained single-tracked.⁹ The company replaced the timber stringers and knee braces with steel stringers and steel-angle knee brace assemblies in 1923. This change appears to be the company's only renovation to the 1870s McKinley Park Trestle prior to the 1929 realignment of present-day Bausman Street.¹⁰

The Department of Public Works discussed the extension and widening of Bausman Street to its current width and location in 1929. With the McKinley Park Trestle crossing the area of improvement, alterations to the structure were necessary to accommodate the new road. The estimated cost of the alteration was \$15,000.¹¹ In response to the proposed City project,

⁷Pittsburgh Railways Company, Ledger of Construction Orders, Description of Construction Order Number 512, Miller Memorial Library, Pennsylvania Trolley Museum, Washington, Pennsylvania.

⁸*Ibid.*

⁹Pittsburgh Railways Company, "Estimate for Track Construction," 21 January 1914, McKinley Park Bridge Files.

¹⁰AWK, "Bridge Inspection," (Pittsburgh, Pennsylvania: NP, 1992), p 1.

¹¹O. Williams to W.T. Rossell, letter dated 17 August 1928. McKinley Park Bridge Files.

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Pittsburgh Railways suggested the City or County pay for reconstruction.¹² Discussions ensued as to cost and design. The Company's final decision was to rebuild the McKinley Park Bridge "with no encroachment on the branch of the Boulevard as shown on the County's plan. [In addition, they would] assume all risks and liabilities in connection with the same and all costs incidental to delays to and interference with their traffic. The City would pay to the company the sum of \$14,000, which would represent the entire cost to the City."¹³

Alterations to the structure began in 1929. Pittsburgh Railways considered two designs in order to fulfill its contract with the City of Pittsburgh. The first renovation design specified the removal of bents 5, 6, and 7, starting from the Castle Shannon side. The wooden trestle in this area would be replaced by three plate girder spans totaling 80' in length and would be supported by two steel towers.¹⁴ However, the design was fully altered in April 1929 as specified in Construction Order 1813. This construction plan provided for the removal of bents 7, 8, 9, 10, 11, and 12 beginning from the Pittsburgh side of the bridge and the installation of three plate girder spans totaling 131 feet in length.¹⁵ Both sets of plans indicated that the new construction consisted of a steel superstructure with concrete foundations. These plans also allowed for a 50' roadway with an 18' paved surface for vehicles. In June 1929, the Pittsburgh Railways Company finalized the use of Design 1813 for the alterations.¹⁶

During the design phase, Pittsburgh Railways explored the feasibility of double-tracking the new bridge. This plan was discarded though since double-tracking increased the cost of alterations from \$14,820 to \$27,666.¹⁷ While double-tracking was abandoned in 1929, Design 1813 allowed for the future double-tracking of McKinley Park Bridge. The completion date for the construction was August 1929.¹⁸ This is the structure that stands over Bausman Street today.

The history of this crossing spans from the 1870s to 1993 when the Port Authority of Allegheny County stopped service on the Overbrook Trolley Line. The importance of the bridge crossing is the engineering innovation needed to safely construct a crossing which not only accommodated crossing over a road but also the deep ravine in which McKinley Park is

¹²T. Fitzgerald to Edward G. Lang, letter dated 24 September 1928, McKinley Park Bridge Files.

¹³John D. Stevenson to C.M. Reppert, letter dated 11 March 1929, McKinley Park Bridge Files.

¹⁴Pittsburgh Railways Company, "Design-Proposal Trestle Bents and Girders, High Bridge," dated 11 March 1929, McKinley Park Bridge Files

¹⁵Pittsburgh Railways Company, "Authority for Capital Improvements--C.O. Number 1813, Design Proposal Trestle Bents and Girders High Bridge, Drawing No. 1813," McKinley Park Bridge Files.

¹⁶Pittsburgh Railways Company, "Before the Public Service Commission of the Commonwealth of Pennsylvania, Municipal Contract," 11 July 1929, McKinley Park Bridge Files.

¹⁷O. Williams to W.H. Boyce letter dated 19 June 1929. McKinley Park Bridge Files.

¹⁸J.L. Ross to W.G. Jens, letter dated 1 May 1929, McKinley Park Bridge Files.

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located. In addition, this structure is perhaps one of the few remaining, partial trestle structures to serve not only a narrow-gauged steam railroad, but also an electric interurban trolley line. Though this structure will be removed, the construction of a new bridge for the proposed Stage II Light Rail Transit represents the continuing evolution of this historic rail corridor.

Sources of Information

Primary Resources

Pittsburgh Railways Company Papers--A1S 74:29. Hillman Library, Archives for Industrial Society, University of Pittsburgh, Pittsburgh, Pennsylvania.

Pittsburgh Railways Company Papers. Miller Memorial Library, Pennsylvania Trolley Museum, Washington, Pennsylvania.

Port Authority of Allegheny County Agreement Files 920.5 of the Overbrook, Drake, and Library Trolley Lines, Way and Structures Division, South Hills Junction Office, Pittsburgh, Pennsylvania.

Secondary Resources

AWK Consulting Engineers. "Periodic NBIS Bridge Inspection Report--McKinley Park Bridge, Prepared for the Port Authority of Allegheny County." Pittsburgh, Pennsylvania, April 1992.

Maps

AWK Consulting Engineers. "Periodic NBIS Bridge Inspection Report--McKinley Park Bridge, Prepared for the Port Authority of Allegheny County." Pittsburgh, Pennsylvania, April 1992.

Hopkins, G.M. *1910 Atlas of Greater Pittsburgh, Plates 27-30*. Philadelphia, Pennsylvania: G.M. Hopkins, 1910.

_____. *Maps of Pittsburgh, Volume 6, Plates 1, 5, 12, 13, 23, 26, 27, 28*. Philadelphia, Pennsylvania: G.M. Hopkins, 1916. Corrected with Revisions 1928.

Pittsburgh Railways Company. "Design-Proposal Trestle Bents and Girders--High Bridge Drawing 1789." Port Authority of Allegheny County Agreement Files 920.5 of the Overbrook, Drake, and Library Trolley Lines, Way and Structures Division, South Hills Junction Office, Pittsburgh, Pennsylvania.

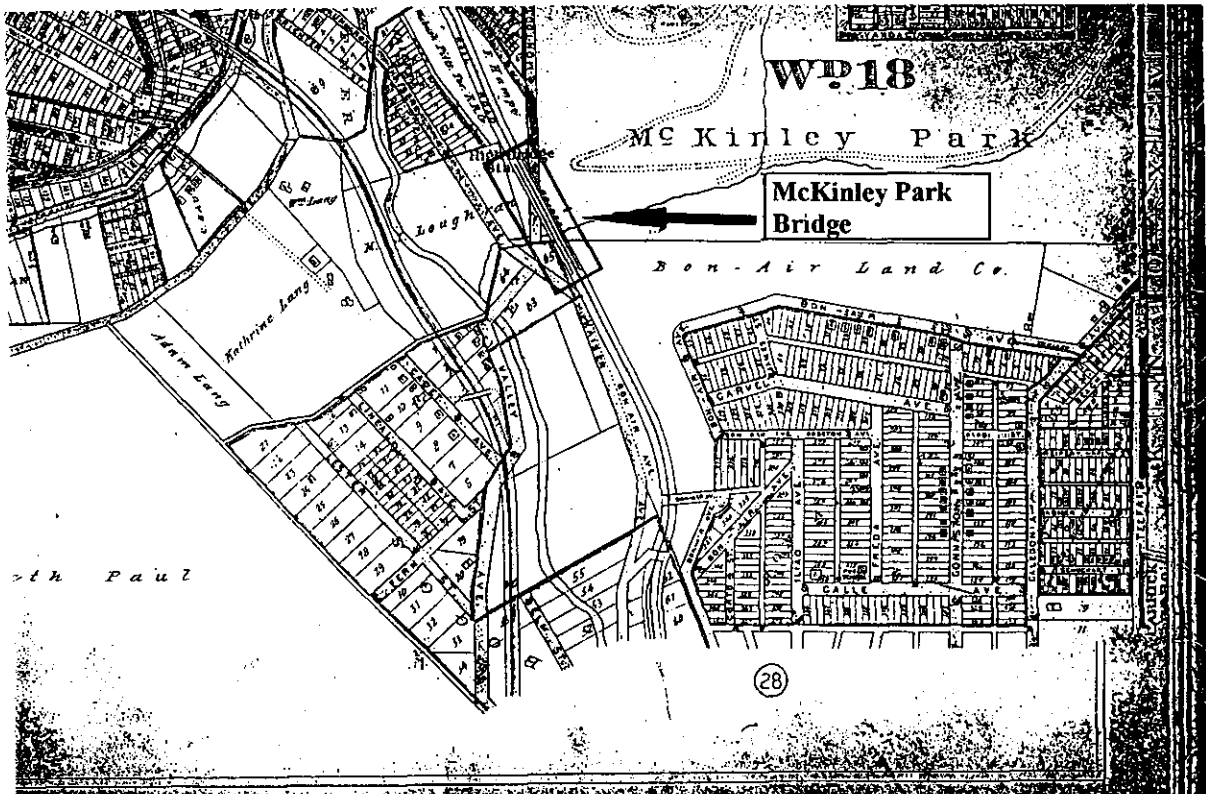
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_____. "Design Proposal Trestle Bents and Girders--High Bridge, Drawing 1813." Port Authority of Allegheny County Agreement Files 920.5 of the Overbrook, Drake, and Library Trolley Lines, Way and Structures Division, South Hills Junction Office, Pittsburgh, Pennsylvania.

Port Authority of Allegheny County. *Light Rail Transit System Map*. Pittsburgh, Pennsylvania, ND.

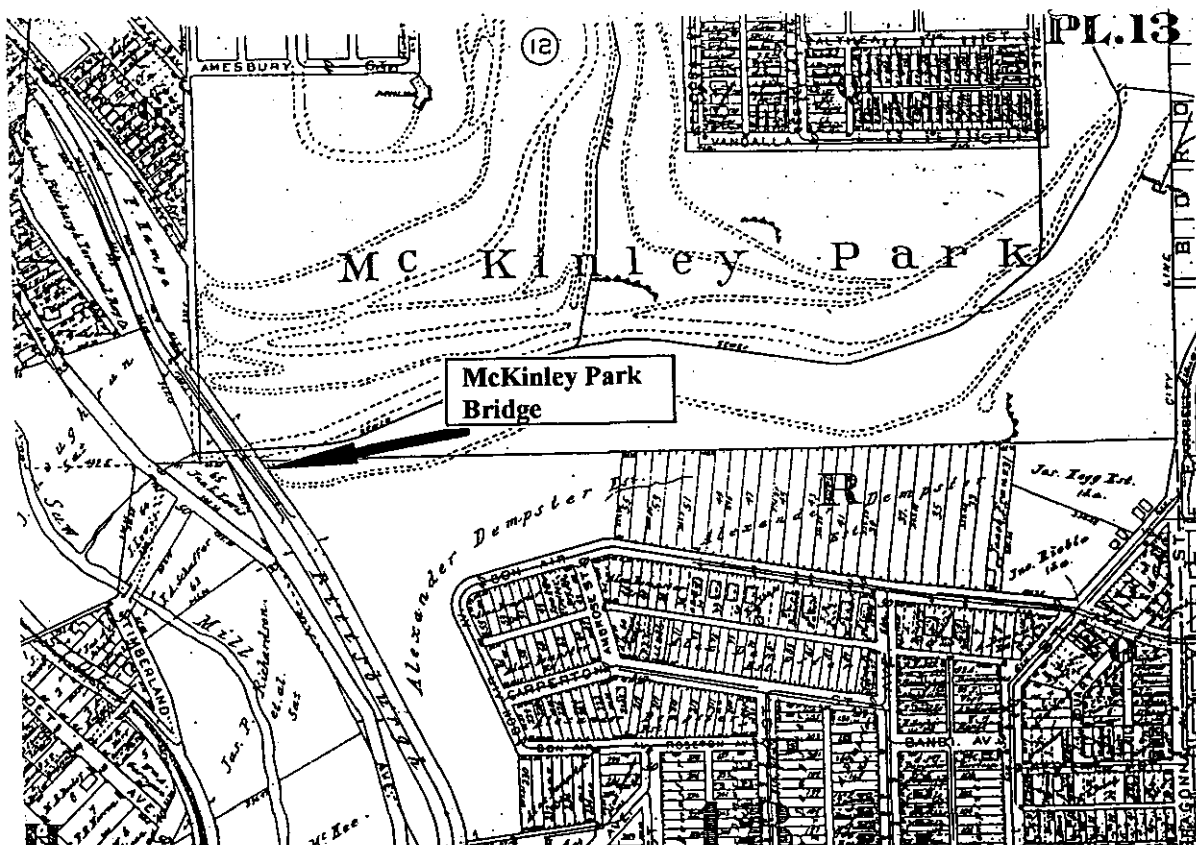
_____. "Maintenance Department Plans, Plate B." Pittsburgh, Pennsylvania, ND.

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Scale 1" = 769 feet
Illustrating the McKinley Park Bridge in its Setting
Original Scale 1" = 300 feet
1910
Griffith Morgan Hopkins, *Atlas of Greater Pittsburgh*, Plate 29
(Philadelphia, Pennsylvania: G.M. Hopkins Company, 1910)

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Scale 1" = 147 feet
Illustrating the McKinley Park Bridge in its Setting
Original Scale 1" = 100 feet
1916
Griffith Morgan Hopkins, *Maps of Pittsburgh, Plate 13*
(Philadelphia, Pennsylvania: G.M. Hopkins Company, 1916)